

## **Food Signs in Radiology**

**Mehboob Hussain and Saleh Al Damegh**

*Radiology Department*

*College of Medicine, Qassim University.*

### **Abstract:**

#### **Objective:**

Certain diseases show classic radiological signs that resemble various types of food items like fruits, meat, vegetables, eggs, bakery, grocery and confectionary items. In this article various food signs are discussed and correlated with the various food items in a pictorial way. The objective of this pictorial essay is to provide the information and learn the characteristic radiological signs resembling various food items. These food signs are easy to recognize and allows a confident diagnosis on the basis of imaging findings alone or can narrow down the differential diagnosis.

**Keywords:** food signs, radiological signs, diagnosis

#### **Correspondence:**

*Dr. Mehboob Hussain*

*Department of Radiology*

*College of Medicine, Qassim University*

*Saudi Arabia*

*E-mail : moby\_hussain@yahoo.com*

## Food Signs in the Chest Diseases

### **Miliary Shadowing**

The term miliary comes from "millet seed" popular birdseed) (Fig 1a). On the Chest radiograph, a pattern of diffuse, tiny, well-defined nodules of 2–4 mm in size is called "miliary shadowing"<sup>(1)</sup> (Fig 1b). This pattern is often seen with pulmonary tuberculosis (Fig 1c). The other differential diagnosis of miliary shadowing includes fungal infections, inhalational diseases, sarcoidosis, eosinophilic granuloma, and metastatic disease (particularly from thyroid tumors, melanoma, and choriocarcinoma).<sup>(2-6)</sup>



Fig.(1a). Millet seed

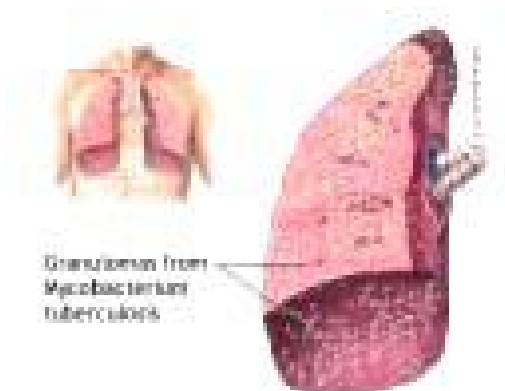


Fig. (1b). Pulmonary TB

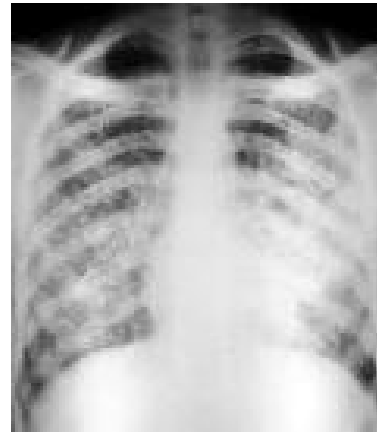


Fig (1c). Miliary Shadowing in Tuberculosis.

### **Honeycomb Lung**

The radiological appearance of the lungs in various conditions may resemble honeycomb (Fig 2a). Honeycombing refers to an advanced stage of fibrosis in which normal lung parenchyma is replaced by cystic spaces of 5–10 mm (Fig. 2b). This is visible on Chest x-ray (Fig. 2 c) as well as on C T scan (Fig. 2d) Honeycomb shadowing is a particular feature of histiocytosis X<sup>(5-6)</sup>. The other common causes of honeycomb lung include pneumoconiosis, sarcoidosis, fibrosing alveolitis, scleroderma and rheumatoid diseases<sup>(7-8)</sup>.



Fig (2a). Honey comb



Fig. (2b). Pathological specimen of Honeycomb lung



Fig. (2c). Honeycombing in pneumoconiosis

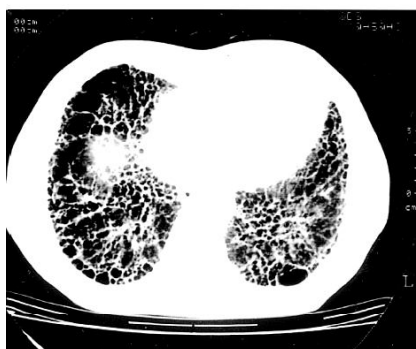


Fig. (2d). C T Scan showing Honeycombing

### **Eggshell Calcification**

Shell like calcification of the walls of hilar or mediastinal lymph nodes may be seen in few cases of silicosis, sarcoidosis, following treatment of lymphoma and occasionally with advanced pulmonary disease. <sup>(2-4, 9-11)</sup> The Chest x-rays may show eggshell calcification resembling eggs wall (Fig 3 a, b & c).



Fig. (3a). Eggs



Fig. (3b). Chest PA showing eggshell calcification

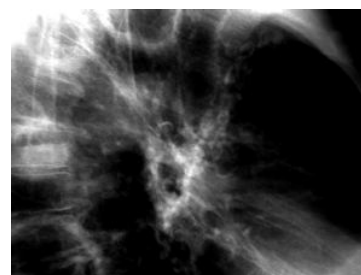


Fig. (3c). Magnified lateral view

### **Popcorn Calcification**

Popcorn calcification appears as amorphous cloud like, resembling popcorns (Fig 4a). This is seen in chest x-rays in up to 30% of pulmonary hamartomas (Fig.4b) <sup>1</sup>. This type of calcification also occurs in cartilaginous and chondroid lesions <sup>(12)</sup>.



Fig. (4a). Popcorns



Fig. (5b). Cottage loaf bread, a traditional bread in U.K



Fig. (4b). Chest PA showing popcorn calcification in Hamartoma

### Food signs in musculoskeletal disorders

#### ***Salt and Pepper Calvaria***

The characteristic granular or mottled appearance of the skull in hyperparathyroidism (Fig.6a) caused by trabecular bone resorption of the Calvaria resembles the peeper pot (Fig.6b), giving the name pepper pot skull or salt and pepper skull.<sup>(15)</sup>

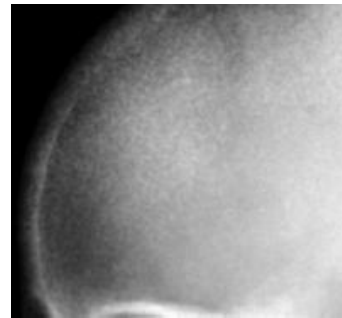


Fig. (6a).Pepper pot skull in hyperparathyroidism

#### ***Cottage Loaf Sign***

The MRI appearance of the partially herniated liver through the ruptured right hemidiaphragm<sup>(13-14)</sup> (Fig.5a) may resemble with the traditional bread prepared in England (Cottage loaf- Fig 5b).



Fig. (5a) MRI coronal plane showing partially herniated liver through the Ruptured Diaphragm resembling Cottage loaf bread



Fig. (6b). Pepper pot

### ***Pancake Vertebra***

The pathological appearance of the vertebra on imaging to pancake (Fig.7a) is termed as pancake vertebra. This is also known as "vertebra plana" or "silver dollar sign". It is caused by trauma in normal vertebra or collapse of vertebral body in pathological spine like metastases (Fig.7b), multiple myeloma, lymphoma (Fig.7 c), haemangioma, eosinophilic granuloma (Fig 7 d) or osteogenesis imperfecta<sup>(16-17)</sup>

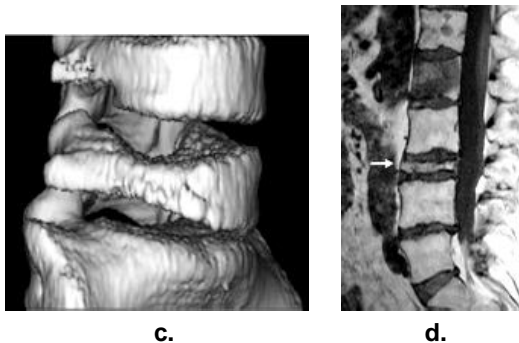
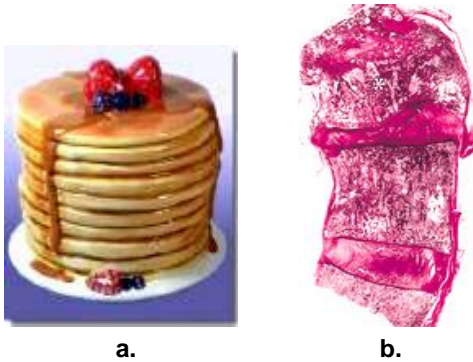


Fig. (7a). Pancake, b. Compressed vertebra  
c. Reconstructed CT showing vertebral compression  
d. MRI showing vertebral plana.

### ***Hamburger Sign***

Normally, at axial CT, the vertebral facet (apophyseal) joint space looks like a hamburger (Fig.8a). When the facet joint is dislocated, the articular facets become uncovered, or naked, also called "naked facet sign"<sup>(18)</sup> This CT sign is characteristic of a flexion-distraction injury and indicates severe ligamentous disruption and spinal instability (Fig.8b).<sup>(19-20)</sup> It may be either unilateral or bilateral depending on whether facet dislocation is unilateral or bilateral.



Fig. (8a). Hamburger

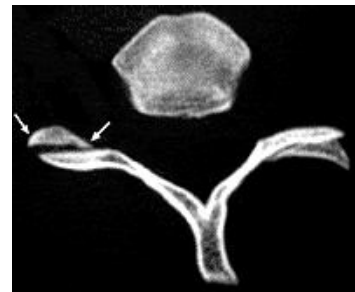


Fig. (8b). Axial CT Scan of a vertebra revealing presence of hamburger sign on right side and loss of hamburger sign on left side indicating flexion-distraction injury.

### ***Champagne Glass Pelvis***

In Achondroplasia, the pelvis is small<sup>(21)</sup>, its diameters are reduced (Fig.9a) and the pelvic inlet resembles a champagne glass (Fig 9b) due to abnormal softening of the bones.

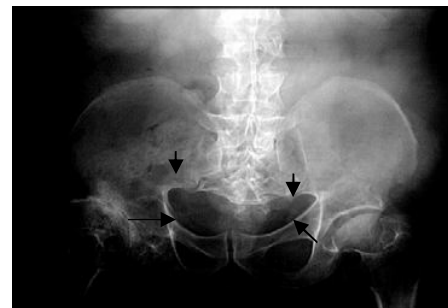


Fig. (9a). X-ray pelvis in Achondroplasia



Fig. (9b). Champagne glass

### **Onion Skin Periosteal Reaction**

In an aggressive bone lesion like acute osteomyelitis, Ewing's sarcoma (Fig.10a) or osteosarcoma, the successive deposition of periosteal layers gives a lamellated or onion skin appearance (Fig.10b) on plain films.<sup>(22)</sup>

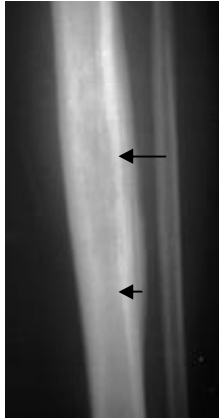


Fig. (10a).X-ray tibia revealing lamellated periosteal reaction on lateral aspect in Ewing's sarcoma.



Fig. (10b). Onion skin showing whorls

### **Dinner Fork Deformity**

In Colles' fracture, the distal radius is fractured and angulated dorsally, giving rise clinically and radiologically to the "dinner fork deformity"<sup>(23)</sup> at the wrist (Fig11a). This has typical resemblance to the dinner forks (Fig.11b).

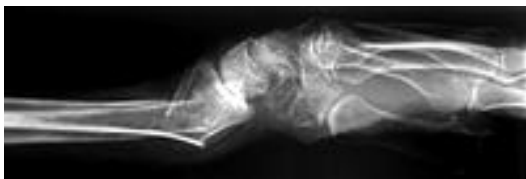


Fig. (11a).Colles' fracture showing dinner fork deformity



Fig. (11b). Picture of dinner forks

### **Sausage Digit**

Sausage is a minced and seasoned meat stuffed into cylindrical case of animal tissue (Fig.12a), frequently eaten in Europe. The term sausage digits refer to the clinical and radiologic appearance of diffuse fusiform swelling of digits due to soft-tissue inflammation from underlying arthritis or dactylitis (Figs.12b-c). The most common cause of sausage digit is psoriatic arthropathy. Other causes include osteomyelitis, sickle cell anemia, sarcoidosis, and tuberculous dactylitis (spina ventosa).<sup>(2-3)</sup>



Fig. (12a).Sausages



Fig. (12b). Psoriatic hands, resembling sausages



Fig. (12c). X-rays finger showing soft tissue swelling resembling sausage digit



**Licked Candy Stick Appearance**

The term licked candy stick appearance refers to tapering of the tips of the metacarpal / metatarsal bones (Fig.13a) or phalanges. The tapered bony tips resemble the licked candy (Fig 13b). It is usually associated with psoriatic arthropathy. Occasionally, it may occur in Rheumatoid arthritis and leprosy<sup>(24)</sup>.



Fig. (13a). X-ray both feet showing tapered metatarsal ends in psoriasis

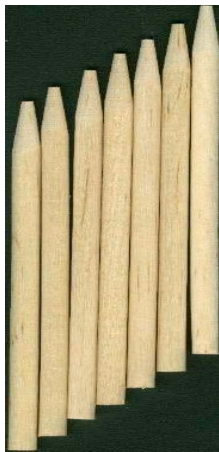


Fig. (13b). Candy sticks

**Celery stalk Metaphysis**

This is a term referred to vertical striations in the metaphysis of long bones or pelvis produced by the dysplastic bone disease like osteopathia striata (Fig 14a). This is an asymptomatic condition and the radiological picture resembles with the Celery stalk, a vegetable used in salad (Fig.14b). Similar picture may also be seen in congenital rubella infection.



Fig. (14a).X-ray left hip showing vertical Striations in femoral neck in Osteopathia Striata



Fig. (14b). Celery stalk

**Rice Grain Calcification: (Fig 15)**

Calcified Cystiserci within the muscles produce ovoid flecks of calcification parallel to the long axis of muscles<sup>(1,3)</sup> (Fig.15a), resembling grains of rice (Fig.15b).

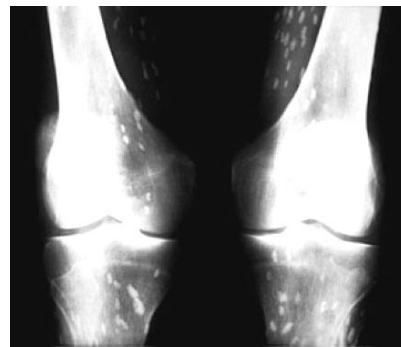


Fig. (15a). X-ray both knees showing bilateral rice grain soft tissue calcifications around the knees



Fig. (15b). Rice grains.

### Food Signs in Gastrointestinal Diseases **Apple Core Lesion**

The annular carcinoma of colon produces focal circumferential thickening of the bowel wall, narrowing of colonic lumen, associated with shouldering. On barium examination, this gives rise an appearance of the affected colon similar to the partially eaten apple (Fig.16a) called apple core lesion <sup>(25)</sup> (Fig.16b, c).



Fig.(16a). partially eaten apple



Fig. (16.b, c). Double contrast barium enema showing apple core lesion due to carcinoma of colon

### **Coffee Bean Sign**

This term is referred as the enormously dilated air-filled sigmoid colon in sigmoid volvulus resembling a coffee bean (Fig.17a) on plain abdominal x-ray (Fig17b). The dilated sigmoid colon arising from the pelvis may extend up to the diaphragm and the apposed medial walls of colon give appearance of the cleft of coffee bean. <sup>(26-28)</sup>



Fig. (17a). Coffee beans



Fig. (17b). Plain x-ray abdomen showing-enormously dilated sigmoid colon giving coffee bean appearance.

### **Omental Cake**

The metastatic infiltrations into the mesenteric fat from the adenocarcinomas arising from carcinoma stomach, colon and ovary <sup>(29, 30)</sup> produce soft tissue lesion in the Omental fat called Omental caking on CT scan (Fig.18). Anteriorly, this soft tissue density in Omental fat ante gives the appearance of cream over the cake, called Omental caking.



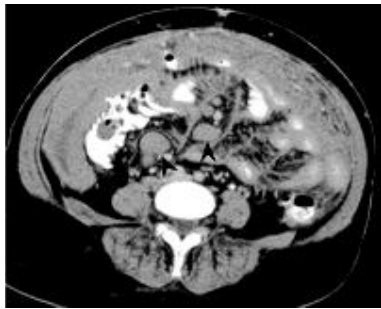
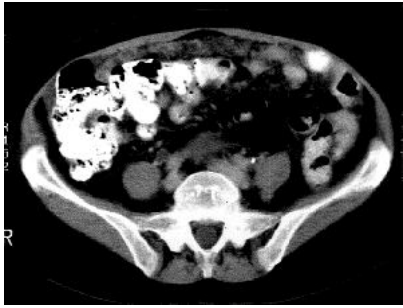


Fig. (18). CT Scan of lower abdomen showing Omental Infiltrations in two different patients.

### **Donut Sign**

Donut is a small cake of dough fried in fat /oil (Fig.19a). Donut sign refers to imaging finding that resembles donut. Circumferential thickening of the bowel wall in carcinoma of colon and inflammatory bowel disease resembles an appearance similar to donut on CT scan <sup>(2, 3, 31)</sup>



Fig. (19a). Donut



Fig. (19b). CT Scan pelvis showing Donut sign (arrow) in Inflammatory bowel disease.

### **Food Signs in Urogenital Diseases**

#### **Pear-shaped Bladder**

This term is referred to as the appearance of the urinary bladder on cystogram examination resembling with the pears (Fig.20a). The causes for the pear-shaped bladder include pelvic lipomatosis, pelvic hematoma, pelvic collection, pelvic masses, bilateral pelvic muscle hypertrophy or lymphadenopathy. <sup>(32-34)</sup>



Fig. (20a). Pears



Fig. (20b). Cystogram showing pear-shaped bladder

## FOOD SIGNS IN BRAIN DISORDERS

### Berry Aneurysm

The appearance of the intracranial saccular aneurysm on CT scan (Fig.21a) may resemble the size and shape of a berry (Fig.21b), hence termed berry aneurysm. It may occur in isolation or in association with polycystic kidneys or coarctation of aorta.<sup>(1, 3)</sup>



Fig. (21a). CT brain showing Berry aneurysm.



Fig. (21b). Berries.

### Banana Sign

The banana-appearance (Fig.22a) of the cerebellum on the antenatal ultrasound<sup>35</sup> due to downward traction of the spinal cord and brainstem in neural tube defects<sup>(36)</sup> gives the name banana sign (Fig.22b).



Fig. (22a). Banana



Fig. (22b). Antenatal US of fetal head showing banana sign in the posterior fossa.

### Lemon Sign

The appearance of the fetal cranial vault on antenatal ultrasound resembling lemon (Fig23a-b) is an excellent indicator for the open spina bifida<sup>(36-38)</sup>

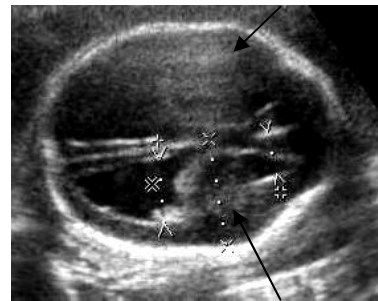


Fig. (23a) Antenatal US of cranium showing lemon sign



Fig. (23b). Lemon

## Conclusion

The recognition and application of these food signs on imaging is highly helpful for the diagnosis of various diseases throughout the body. However, these radiological signs should be correlated with clinical and other relevant informations to reach the correct diagnosis.

## Acknowledgments

The authors appreciate the help of Muhammad Zain and Ms Erum Hussain for the proof reading of this article as well as provision of food photos.

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